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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,008	03/15/2004	Noriya Hayashi	080542-0166	6818
22428 7590 02/14/2011 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			EXAMINER LEONARD, MICHAEL L.	
			ART UNIT 1763	PAPER NUMBER
			MAIL DATE 02/14/2011	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/800,008

Applicant(s)

HAYASHI ET AL.

Examiner

MICHAEL LEONARD

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-7, 9, 10, 12 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-7, 9-10, 12, 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 4 and 17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 5,071,613 to Fukami et al. for the reasons set forth in the last Office action.

Regarding claims 4 and 17, the rejection has been previously set forth in the non-final rejection mailed 04/24/2009 and is herein incorporated by reference.

Claims 6, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,071,613 to Fukami et al. for the reasons set forth in the last Office action.

Regarding claims 6, 16, and 18, the rejection has been previously set forth in the non-final rejection mailed 10/13/2010 and is herein incorporated by reference.

Claims 4-7, 10, 12, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,071,613 to Fukami et al. in view of U.S. Patent No. 5,032,622 to Herrington et al. for the reasons set forth in the last Office action.

Regarding claims 4-7, 10, 12, and 17-18 the rejection has been previously set forth in the non-final rejection mailed 10/13/2010 and is herein incorporated by reference.

Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,071,613 to Fukami et al. in view of U.S. Patent No. 4,251,428 to Recker et al. for the reasons set forth in the last Office action.

Regarding claims 5 and 12, the rejection has been previously set forth in the non-final rejection mailed 10/13/2010 and is herein incorporated by reference.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,071,613 to Fukami et al. in view of U.S. Patent No. 4,738,999 to Blenner et al. for the reasons set forth in the last Office action.

As to claim 9, the rejection has been previously set forth in the non-final rejection mailed 04/24/2009 and is herein incorporated by reference

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,071,613 to Fukami et al. in view of U.S. Patent No. 5,032,622 to Herrington et al. and further in view of U.S. Patent No. 4,738,999 to Blenner et al. for the reasons set forth in the last Office action.

Regarding claim 9, the rejection has been previously set forth in the non-final rejection mailed 10/13/2010 and is herein incorporated by reference.

Claims 4-7, 10, 12, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO-0216482 to Joshi et al. (U.S. Patent Pub No. 2003/0176561 will

be cited below). in view of U.S. Patent No. 5,071,613 to Fukami and U.S. Patent No. 5,032,622 to Herrington et al. for the reasons set forth in the last Office action.

Regarding claims 4-7, 10, 12, and 16-18, the rejection has been previously set forth in the non-final rejection mailed 10/13/2010 and is herein incorporated by reference.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO-0216482 to Joshi et al. (U.S. Patent Pub No. 2003/0176561 will be cited below). in view of U.S. Patent No. 5,071,613 to Fukami and U.S. Patent No. 5,032,622 to Herrington et al. and U.S. Patent No. 4,738,999 to Blenner et al. for the reasons set forth in the last Office action.

Regarding claim 9, the rejection has been previously set forth in the non-final rejection mailed 10/13/2010 and is herein incorporated by reference.

Response to Arguments

Applicant's arguments, see Arguments, filed 01/13/2011, with respect to claims 6-7, 9, 16, and 18 have been fully considered and are persuasive. The rejection under 35 U.S.C. 112, first paragraph has been withdrawn.

Applicant's arguments filed 01/13/2011 have been fully considered but they are not persuasive.

Firstly, the applicants' amended their claims to read "wherein the polyol (i) consists of at least one bifunctional polyol having an average molecular weight of from 100 to 250." The applicants' have erred in interpreting the claims to read wherein the composition can only contain a mixture of bifunctional and trifunctional isocyanate and ONLY a bifunctional polyol having an average molecular weight of from 100 to 250. This is incorrect; the claims are open to other polyol components because of the comprising language in line 1 and line 2. Therefore, as long as the prior art contains a polyol that meets bifunctional polyol having an average molecular weight of from 100 to 250 limitation as well as the mixture of difunctional and trifunctional isocyanates then the prior art reads on the claims. In other words, the composition as written because of the comprising language contains:

- a) mixture of bifunctional and trifunctional isocyanate
- b) bifunctional polyol having an average molecular weight of from 100 to 250
- c) basically anything else that reacts or doesn't react in urethane chemistry.

The applicants' argued that the Fukami reference does not disclose the use of **only** bifunctional polyols having an average molecular weight of from 100 to 250. The claims as written allow for other polyol components, Fukami teaches in table 3 dipropylene glycol (bifunctional polyol having an average molecular weight of from 100 to 250), Sannix HD 402 (tetrafunctional polyether polyol), and millionate MR200 (mixture of diisocyanate and triisocyanate).

The applicants' argued that Fukami fails to disclose that the polyurethane formation has a shape memory characteristic, the examiner disclosed wherein the polyurethane would inherently possess such characteristic (04/24/2009, non-final) and the burden of proof was shifted to the applicants' to show otherwise, the applicants' have not provided such data.

The applicants' argued that Fukami fails to teach or suggest using a mixture of bifunctional and trifunctional isocyanate. Example 4, teaches a mixture of carbodiimide-functional polyisocyanate (trifunctional) and polyphenylene polymethylene polyisocyanate (mixture of 4,4-MDI, difunctional, trifunctional, a polyfunctional) polyisocyanate (See MSDS of Millionate MR200). Furthermore, it is well known in the art that polyphenylene polymethylene polyisocyanate is a mixture of difunctional, trifunctional, and polyfunctional polyisocyanates, so examples 1 and 3 which use polyphenylene polymethylene polyisocyanate will also read on the isocyanate component of the claims.

The applicants' argued with respect to claims 6, 16, and 18, that the examiner does not explain how the deficiency of Fukami (fails to disclose potlife) is overcome by any teaching or suggestion to Fukami. The examiner took the position that Fukami teaches that it is important to suppress increases in viscosity of the resin during impregnation (Column 3, lines 61+). Moreover, Fukami teach that the reactants making up the resin may react upon mixing – this reaction would increase viscosity. Therefore, it would be obvious to select a temperature that is below the reaction temperature of the reactants - thereby preventing any unwanted premature reactions - while also choosing

a temperature that will allow for sufficient flow (potlife) of the reactants - i.e. the impregnation temperature is a result effective variable. Even though, Fukami discloses the use of a delayed action catalyst to slow down increases in viscosity, a person of ordinary skill in the art would have combined the teachings of delayed action catalysis of Fukami as well as known polyurethane chemistry teachings mentioned above to find a suitable potlife and/or workability for the polyurethane material in order to completely penetrate the fibrous reinforcing material.

Therefore, it would have been obvious to arrive at the claimed "room temperature" limitation since it has been held that discovering an optimum value of a result effective variable only involves routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

The applicants' argued that the combination of reference to Joshi and Fukami fail to disclose the use of **only** bifunctional polyols having an average molecular weight of from 100 to 250. Joshi discloses an overlapping molecular weight (50 to about 2000) of the polyol to component. Fukami further discloses that the polyol can be used with a hydroxyl value within the range of 300 to 800, and in this case if the hydroxyl value is smaller than 300 (larger molecular weight), the necessary rigidity for construction material can not be obtained, while if it is larger than 800, impact resistance tends to be inferior, and also the reaction is too fast even without the use of catalyst, whereby penetration into fibrous reinforcing material tends to become undersirably difficult (Column 3, lines 19-27).

The claims as written allow for other polyol components, Joshi and Fukami both teach the use of low molecular weight polyol components that satisfy b) limitation of claims 4 and 6 as discussed in the non-final rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL LEONARD whose telephone number is (571)270-7450. The examiner can normally be reached on Mon-Fri 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Milton I. Cano/
Supervisory Patent Examiner, Art Unit 1763

/MICHAEL LEONARD/
Examiner, Art Unit 1763